



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,853	03/18/2004	Shoji Kodama	274.43202X00	5857
24956 7590 05/08/2007 MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314				
			EXAMINER LEWIS, ALICIA M	
			ART UNIT 2164	PAPER NUMBER
			MAIL DATE 05/08/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/802,853	Applicant(s) KODAMA, SHOJI	
	Examiner Alicia M. Lewis	Art Unit 2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6,9-14,17,18,21-25 and 28-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6,9-14,17,18,21-25 and 28-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.



SAM RIMELL
PRIMARY EXAMINER

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is responsive to the request for continued examination (RCE) filed on February 14, 2007. Claims 1, 6, 10, 13, 17, 18, 22, 25, 28, 30 and 33 are presently amended, and claims 3-5, 7, 8, 15, 16, 19, 20, 26, and 27 are canceled. Therefore, claims 1, 2, 6, 9-14, 17, 18, 21-25 and 28-35 remain pending in this application.

Drawings

The drawings were received on August 2, 2006. These drawings are acceptable.

Claim Objections

1. Claim 33 is objected to because of the following informalities: there is no period at the end of the claim. Appropriate correction is required.
2. Claim 13 is objected to because of the following informalities: the comma at the end of line 23 is missing. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2164

4. Claims 1, 2, 25 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US Patent Application Publication 2002/0152339 A1) in view of McGovern et al. (US Patent Application Publication 2005/0097263²⁶⁰₂₆₀ A1) ('McGovern').

With respect to claim 1, Yamamoto teaches a system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising:

- a first interface for file level input/output (I/O) (paragraph 18 lines 1-5);
- a second interface for block level I/O (paragraph 18 lines 1-4);
- a plurality of physical volumes upon which logical volumes are represented (paragraph 7 line 2, paragraph 29 lines 27-30, paragraph 43);
- a first controller which processes file level I/O requests (paragraph 7 lines 4-7 and 13-16); and
- a second controller which processes block level I/O requests (paragraph 7 lines 4-5 and 13-16),

wherein, in response to a file system protect request directed to a particular logical volume, the particular logical volume is protected for a specified period of time and a physical volume of the particular logical volume is also protected for the specified period of time (paragraph 6, paragraph 7 lines 13-16, paragraph 35, paragraph 39), and

wherein once the particular logical volume is protected, write requests to the particular logical volume or physical volume of the particular logical volume via either

Art Unit: 2164

the first or second controller are not permitted until expiration of the specified period of time (paragraphs 35, 39 and 47),

wherein information regarding whether or not the particular logical volume is protected is stored in a volume status table having a plurality of entries which indicate statuses of the particular logical volume (Figures 5 and 6, paragraphs 43, 45 and 47).

Although Yamamoto uses the term a controller element, it is clear that there are two separate controller elements being used, one for file level and one for block level. For example, he states in paragraph 7 that the controller elements includes at least a SCSI interface for block type read/write requests and a file system interface for file level read/write requests. This interpretation is upheld throughout this office action wherever Yamamoto is used as a reference.

Also, it is inherent that if a logical volume or physical volume is protected at all, then it is protected for a specified period of time. Because no exact period of time has been stated, any period of time (i.e. one second) meets the limitations of the claim.

Yamamoto does not teach wherein said entries include a first status indicating a retention period for the particular logical volume, the retention period indicating how long data in the particular logical volume should remain unchanged and thereby determining when data can next be written to the particular logical volume.

McGovern teaches a system and method for record retention date in a write once read many storage system (see abstract), in which he teaches a retention period for the particular logical volume, the retention period indicating how long data in the particular

Art Unit: 2164

logical volume should remain unchanged and thereby determining when data can next be written to the particular logical volume (paragraphs 20-21).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Yamamoto by the teaching of McGovern because wherein said entries include a first status indicating a retention period for the particular logical volume, the retention period indicating how long data in the particular logical volume should remain unchanged and thereby determining when data can next be written to the particular logical volume would enable a method for setting retention dates, which in turn locks volumes against modification and/or deletion (McGovern, abstract).

With respect to claim 2, Yamamoto as modified teaches wherein the plurality of physical volumes permits creation of a file system to store archived data (Yamamoto, paragraph 44).

With respect to claim 25, Yamamoto as modified teaches a storage system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising:

- a first interface for file level input/output (I/O) (Yamamoto, paragraph 18 lines 1-5);

- a second interface for block level I/O (Yamamoto, paragraph 18 lines 1-4);

Art Unit: 2164

a plurality of physical volumes upon which logical volumes are represented (Yamamoto, paragraph 7 line 2, paragraph 29 lines 27-30, paragraph 43);

a first controller which processes file level I/O requests (Yamamoto, paragraph 7 lines 4-7 and 13-16); and

a second controller which processes block level I/O requests (Yamamoto, paragraph 7 lines 4-5 and 13-16),

wherein, in response to a file system protect request directed to a particular logical volume, the particular logical volume is protected for a specified period of time and a physical volume of the particular logical volume is also protected for the specified period of time (Yamamoto, paragraph 6, paragraph 7 lines 13-16, paragraph 35, paragraph 39),

wherein once the particular logical volume is protected, write requests to the particular logical volume or physical volume of the particular logical volume via either the first or second controller are not permitted until expiration of the specified period of time (Yamamoto, paragraphs 35, 39 and 47),

wherein information regarding whether or not the particular logical volume is protected is stored in a volume status table having a plurality of entries which indicate statuses of the particular logical volume (Yamamoto, Figures 5 and 6, paragraphs 43, 45 and 47), and

wherein said entries include a first status indicating a retention period for the particular logical volume, the retention period indicating how long data in the particular

Art Unit: 2164

logical volume should remain unchanged and thereby determining when data can next be written to the particular logical volume (McGovern, paragraphs 20-21).

With respect to claim 33, Yamamoto as modified teaches a storage system for handling input/output (I/O) requests from a plurality of servers, wherein a first server of the servers sends file I/O requests and a second server of the servers sends block I/O requests, comprising:

- a storage media including a plurality of volumes (Yamamoto, paragraph 7 lines 1-2), at least one of the volumes stores data of file system (Yamamoto, paragraph 8 lines 1-2);

- a first controller, to be coupled to the first server, conducting I/O operations in response to the file I/O requests (Yamamoto, paragraph 7);

- a second controller, coupled to the storage media, to be coupled to the second server, conducting I/O operations in response to the block I/O requests (Yamamoto, paragraph 7); and

wherein at least one volume of the volumes which stores the data of file system is set to be write-protected from the second controller when the first controller received a request from the first server to protect the file system in the storage media for a particular period of time (Yamamoto, paragraphs 35-39 and 47),

wherein information regarding whether or not said at least one volume is protected is stored in a volume status table having a plurality of entries which indicate

Art Unit: 2164

statuses of said at least one volume (Yamamoto, Figures 5 and 6, paragraphs 43, 45 and 47), and

wherein said entries include a first status indicating a retention period of said at least one volume, the retention period indicating how long data in said at least one volume should remain unchanged and thereby determining when data can next be written to the volume (McGovern, paragraphs 20-21).

With respect to claim 34, Yamamoto as modified teaches wherein said first and second controllers share protection information (Yamamoto, paragraph 7 lines 13-16) including status of protection (Yamamoto, paragraph 47) and a retention period for each of the volumes which is set at file system level by the first controller (McGovern, paragraphs 20-21).

With respect to claim 35, Yamamoto as modified teaches wherein the first controller receives the file I/O requests via a first interface and the second controller receives the block I/O requests via a second interface (Yamamoto, paragraphs 7 and 18).

5. Claims 6 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US Patent Application Publication 2002/0152339 A1) in view of McGovern et al. (US Patent Application Publication 2005/00972630 A1) ('McGovern'), as applied to

Art Unit: 2164

claims 1, 2, 25 and 33-35 above, and further in view of Brewer et al. (US Patent 6,336,163 B1) ('Brewer').

With respect to claims 6 and 28, Yamamoto as modified teaches claims 1 and 25.

Yamamoto as modified does not teach wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported.

Brewer teaches a method and article of manufacture for inserting volumes for import into a virtual tape server (see abstract), in which he teaches wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported (Brewer, column 2 lines 56-60, column 6 lines 24-26).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have further modified Yamamoto by the teaching of Brewer because wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported would enable a more detailed tracking of all types of volumes, not just logical volumes, which would add functionality to Yamamoto's storage system (Brewer, column 6 lines 1-3).

6. Claims 9-12 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US Patent Application Publication 2002/0152339 A1) in view of McGovern et al. (US Patent Application Publication 2005/0097263²⁶⁰ A1)

Art Unit: 2164

('McGovern'), as applied to claims 1, 2, 25 and 33-35 above, and further in view of Achiwa et al. (US Patent Application Publication 2003/0009438 A1) ('Achiwa').

With respect to claims 9 and 29, Yamamoto as modified teaches claims 1 and 25.

Yamamoto as modified does not teach wherein said first controller is a network attached storage controller which processes file level I/O requests.

Achiwa teaches a method for file level remote copy of a storage device (see abstract) in which he teaches wherein said first controller is a network attached storage controller which processes file level I/O requests (paragraph 38).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have further modified Yamamoto by the teaching of Achiwa because wherein said first controller is a network attached storage controller which processes file level I/O requests would enable processing of file or directory level access requests (Achiwa, paragraph 8).

With respect to claims 10 and 30, Yamamoto as modified teaches wherein said second controller is a disk controller which processes block level I/O requests (Achiwa, paragraph 93).

Art Unit: 2164

With respect to claims 11 and 31, Yamamoto as modified teaches wherein said first interface is an Ethernet interface which processes file level I/O requests (Achiwa, paragraph 96).

With respect to claims 12 and 32, Yamamoto as modified teaches wherein said second interface is a Fibre Channel interface which processes block level I/O requests (Achiwa, paragraph 93, paragraph 98).

7. Claims 13, 14, 17 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogterp (US Patent Application Publication 2005/0210218 A1) in view of Yamamoto (US Patent Application Publication 2002/0152339 A1), and further in view of McGovern et al. (US Patent Application Publication 2005/0097263²⁶⁰~~2630~~ A1) ('McGovern').

With respect to claim 13, Hoogterp teaches a storage system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising:

a network attached storage (NAS) gateway (Figure 4, paragraphs 27 and 52);
and

a storage system which is connected to said NAS gateway (Figure 4, paragraphs 52 and 55),

wherein said NAS gateway comprises:

a first interface for file level I/O (element 168 in Figure 4, paragraph 52);

a third interface for block level I/O (element 169 in Figure 4, paragraphs 52-54), and

a first controller which processes file level I/O requests (paragraph 56);

wherein said storage system comprises:

a second interface for block level I/O, said second interface being connected to said third interface (paragraph 34),

a plurality of physical volumes upon which logical volumes are represented (paragraph 62);

a second controller which processes block level I/O requests (paragraph 34); and

wherein once the particular logical volume is protected, write requests to the particular logical volume or physical volume of the particular logical volume via either the first or second controller are not permitted until expiration of the specified period of time (paragraph 150).

Hoogterp does not explicitly teach wherein, in response to a file system protect request directed to a particular logical volume, the particular logical volume is protected for a specified period of time and a physical volume of the particular logical volume is also protected for the specified period of time.

Yamamoto teaches a direct access storage system with combined block interface and file interface access (see abstract), in which he teaches:

a first interface for file level input/output (I/O) (paragraph 18 lines 1-5);

a second interface for block level I/O (paragraph 18 lines 1-4);

a plurality of physical volumes upon which logical volumes are represented
(paragraph 7 line 2, paragraph 29 lines 27-30, paragraph 43);

a first controller which processes file level I/O requests (paragraph 7 lines 4-7
and 13-16); and

a second controller which processes block level I/O requests (paragraph 7 lines
4-5 and 13-16),

wherein, in response to a file system protect request directed to a particular
logical volume, the particular logical volume is protected for a specified period of time
and a physical volume of the particular logical volume is also protected for the specified
period of time (paragraph 6, paragraph 7 lines 13-16, paragraph 35, paragraph 39), and

wherein once the particular logical volume is protected, write requests to the
particular logical volume or physical volume of the particular logical volume via either
the first or second controller are not permitted until expiration of the specified period of
time (paragraphs 35, 39 and 47),

wherein information regarding whether or not the particular logical volume is
protected is stored in a volume status table having a plurality of entries which indicate
statuses of the particular logical volume (Figures 5 and 6, paragraphs 43, 45 and 47).

It would have been obvious to a person having ordinary skill in the art at the time
the invention was made to have modified Hoogterp by the teaching of Yamamoto
because wherein said first and second controllers share protection information for said

logical and physical volumes would enable a storage system with direct access storage devices that could be shared between a block interface and a file interface (Yamamoto, paragraph 6).

The combination of Hoogterp and Yamamoto does not teach wherein said entries include a first status indicating a retention period for the particular logical volume, the retention period indicating how long data in the particular logical volume should remain unchanged and thereby determining when data can next be written to the particular logical volume.

McGovern teaches a system and method for record retention date in a write once read many storage system (see abstract), in which he teaches a retention period for the particular logical volume, the retention period indicating how long data in the particular logical volume should remain unchanged and thereby determining when data can next be written to the particular logical volume (paragraphs 20-21).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have further modified Hoogterp by the teaching of McGovern because wherein said entries include a first status indicating a retention period for the particular logical volume, the retention period indicating how long data in the particular logical volume should remain unchanged and thereby determining when data can next be written to the particular logical volume would enable a method for setting retention dates, which in turn locks volumes against modification and/or deletion (McGovern, abstract).

With respect to claim 14, Hoogterp as modified teaches wherein the plurality of physical volumes permits creation of a file system to store archived data (Yamamoto, paragraph 44).

With respect to claim 17, Hoogterp as modified teaches wherein said entries indicate a second status of each volume defining whether the volume is protected or unprotected (Yamamoto, paragraph 47).

With respect to claim 24, Hoogterp as modified teaches wherein said second interface is a Fibre Channel interface which processes block level I/O requests (Hoogterp, paragraph 34).

8. Claims 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogterp (US Patent Application Publication 2005/0210218 A1) in view of Yamamoto (US Patent Application Publication 2002/0152339 A1) and McGovern et al. (US Patent Application Publication 2005/0097263²⁶⁰₂₆₃₀ A1) ('McGovern'), as applied to claims 13, 14, 17 and 24 above, and further in view of Brewer et al. (US Patent 6,336,163 B1) ('Brewer').

With respect to claim 18, Hoogterp as modified teaches claim 13.

Art Unit: 2164

Hoogterp as modified does not teach wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported (Brewer, column 2 lines 56-60, column 6 lines 24-26).

Brewer teaches a method and article of manufacture for inserting volumes for import into a virtual tape server (see abstract), in which he teaches wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported (Brewer, column 2 lines 56-60, column 6 lines 24-26).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have further modified Hoogterp by the teaching of Brewer because wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported would enable a more detailed tracking of all types of volumes, not just logical volumes, which would add functionality to Hoogterp's system (Brewer, column 6 lines 1-3).

9. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogterp (US Patent Application Publication 2005/0210218 A1) in view of Yamamoto (US Patent Application Publication 2002/0152339 A1) and McGovern et al. (US Patent Application Publication 2005/0097263²⁶⁰~~2630~~ A1) ('McGovern'), as applied to claims 13, 14, 17 and 24 above, and further in view of Achiwa et al. (US Patent Application Publication 2003/0009438 A1) ('Achiwa').

With respect to claim 21, Hoogterp as modified teaches claim 13.

Art Unit: 2164

Hoogterp as modified does not teach wherein said first controller is a network attached storage controller which processes file level I/O requests.

Achiwa teaches a method for file level remote copy of a storage device (see abstract) in which he teaches wherein said first controller is a network attached storage controller which processes file level I/O requests (paragraph 38).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have further modified Hoogterp by the teaching of Achiwa because wherein said first controller is a network attached storage controller which processes file level I/O requests would enable processing of file or directory level access requests (Achiwa, paragraph 8).

With respect to claim 22, Hoogterp as modified teaches wherein said second controller is a disk controller network attached storage controller which processes block level I/O requests (Achiwa, paragraph 93).

With respect to claim 23, Hoogterp as modified teaches wherein said first interface is an Ethernet interface which processes file level I/O requests (Achiwa, paragraph 96).

Response to Arguments

10. Applicant's arguments with respect to claims 1, 13, 25 and 33 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Lewis whose telephone number is 571-272-5599. The examiner can normally be reached on Monday - Friday, 9 - 6:30, alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on 571-272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alicia Lewis
May 2, 2007


SAM RIMELL
PRIMARY EXAMINER